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Unifying V-C Movement in Algonquian and Germanic: A View from Morphology

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Abstract
This paper suggests that V-C movement can be detected in polysyntetic languages via its morphological correlates. The claim is based partly on the striking parallelism between the contexts where a particular agreement paradigm (Independent Order) can occur in Algonquian languages and the contexts where V-C movement/V2 can occur in Germanic languages, and partly on the morphological properties of the relevant agreement paradigm in Arapaho (Plains Algonquian). We argue that the existence of agreement allomorphy and the partial prosodic independence of agreement proclitics in this paradigm result from V-C movement feeding into C-triggered allomorphy and m-merger of the proclitic.

Unifying V-C Movement in Algonquian and Germanic: A View from Morphology

Ksenia Bogomolets, Paula Fenger and Adrian Stegovec*

1 Introduction

In his cross-linguistic overview of Verb Second (V2), Holmberg (2015) raises an interesting question: If V2 were present in a polysynthetic language, would it be possible to identify it? The standard V2 pattern is usually recognized through the position of the verb in relation to other constituents in a clause, as illustrated by the contrast between (1a) and (1b). In polysynthetic languages, on the other hand, where lexical arguments are generally assumed to be externally merged as adjuncts to CP and linked to null proforms in argument positions in IP (see Jelinek 1984, Baker 1996), any effects of V2 would be hard to detect. Since a clause in such languages often consists of just one verb form, the true position of the verb in clauses like (2a) and (2b) is impossible to determine from the word order in case an overt C is not present. Moreover, the position of the verbal complex can be even further obscured by the presence of other constituents which can optionally base-adjoin to CP.

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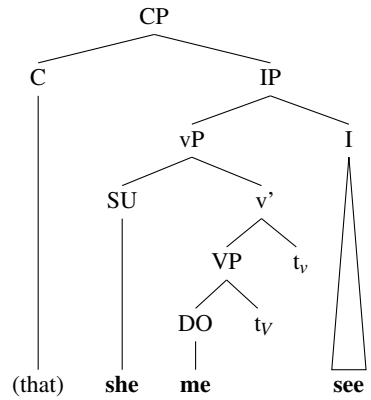

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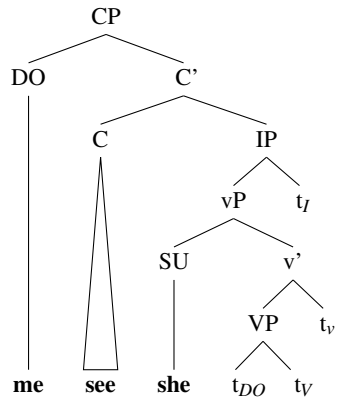

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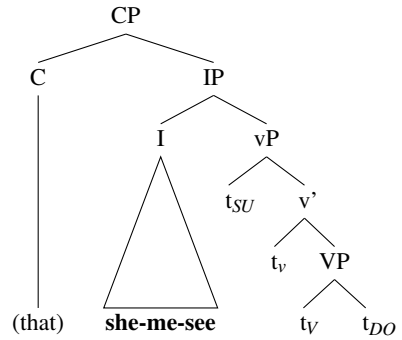

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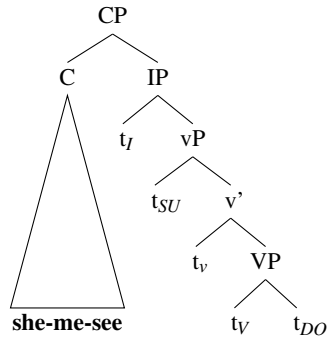
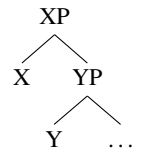


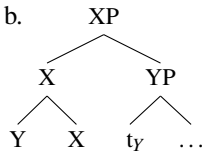
We will argue in this paper that the position of a verb in polysynthetic languages can in fact be identified, but through alternative means. Specifically, we propose that the position of the verb can be determined by looking at its morphology. The basic idea is that because V-C head-movement is a prerequisite for V2, the non-moved and moved verb differ in terms of whether C is part or the verbal complex or not, which leads to potential asymmetries with respect to morphological processes. Following Bobaljik (2012), a head X cannot be a trigger for allomorphy on a head Y (cf. ii) if the two are in distinct maximal projections (3a), but if they are in the same head-complex, it can (3b).

*Authors listed alphabetically. Arapaho data from Cowell and Moss Sr. 2008. We would like to thank Ian Roberts, Jonathan Bobaljik, Željko Bosković, and the audience at PLC 41 for helpful suggestions and feedback.

This means that C should only be able to be a trigger for allomorphy on the verbal complex if C is part of the verbal complex — which is only the case when there is V-C movement.

(3) a. 

i. Y ⇔ α	✓
ii. Y ⇔ β / [__ X]	✗

b. 

i. Y ⇔ α	✓
ii. Y ⇔ β / [__ X]	✓

In fact, an example of this kind of asymmetry is attested in Algonquian, where agreement morphology on the verb alternates based on the type of the clause. We propose that this alternation directly correlates to the presence/absence of V-C movement. We show that the different patterns of this agreement alternation in Algonquian languages in general, and the pattern of Arapaho more specifically, show a striking parallelism with the distribution of V-C movement across Germanic. In addition to the allomorphy pattern, we also provide evidence for V-C movement from phonological interactions between "agreement proclitics" and the verb stem.

This paper is organized as follows. In Section 2, we show that there is a remarkable parallelism between the distribution of the two agreement paradigms in Algonquian and the distribution of V2/V-C movement across Germanic. In Section 3, we briefly discuss Richards's (2004) account of the Algonquian agreement alternation, which also ties the agreement patterns to the presence/absence of V-C movement, but leaves out entirely the issue of allomorphy. We then present our analysis in terms of the locality of morphological processes in Section 4. Section 5 concludes the paper.

2 A Parallel between Algonquian and Germanic

Before we draw any parallels between Algonquian and Germanic, let us first present the basic facts concerning the two alternating agreement paradigms in Algonquian. In most Algonquian languages, any verb may surface with one of two distinct agreement paradigms, and the choice of paradigm is determined by the syntactic environment (see, for example, Brittain 2001, Cowell and Moss Sr. 2008, Oxford 2014). The most salient difference between the two paradigms is the difference in the number of agreement morphemes, which is illustrated in (4).[1]

(4) a. SIMPLE agreement (traditionally *Conjunct Order*):
stem – TH – $\boxed{\text{AGR}_x}$

b. COMPLEX agreement (traditionally *Independent Order*):
$\boxed{\text{AGR}_y}$ – **stem** – TH – $\boxed{\text{AGR}_x}$

A particular verb can surface with either all agreement affixes following the stem, as in (4a) (SIMPLE agreement), or with agreement marking both preceding and following the verb stem, as in (4b) (COMPLEX agreement). However, SIMPLE and COMPLEX agreement do not differ only with respect to the "richness" of agreement morphology: the exponents of the individual agreement affixes themselves vary between the two paradigms. The difference between the two paradigms is illustrated with examples from Wampanoag (Eastern Algonquian) in (5). The verb in the matrix clause in (5a) bears COMPLEX agreement — a proclitic and two suffixes, whereas the verb in the embedded clause in (5b) bears SIMPLE agreement — just the *central* suffix (Richards 2004). Note that despite the verb and both arguments being constant, (5a) and (5b) differ both in terms of the number of agreement morphemes, and in the form of the central suffix ('**-uwô**' vs. '**-âk**'); in other words, allomorphy is present on the verb with respect to the agreement morphemes.

[1] Abbreviations used in the paper: 'X>Y' = portmanteau marker for X acting on Y; 'X.Y' = fused marker for features X and Y; '1, 2, 3' = 1st, 2nd, 3rd person; 'NON.1' = non-1st person; 'AGR' = agreement; 'ASP' = aspect; 'COMP' = complementizer; 'F' = feminine; 'FUT' = future; 'IC' = initial change; 'INV' = 'inverse'; 'MOD' = modal; 'NEG' = negation; 'PART' = participle; 'PL' = plural; 'PRET' = preterite; 'Q' = interrogative; 'SG' = singular; 'SUBJ' = subjunctive; 'T' = tense; 'TH' = theme marker; 'WH' = wh-word.

(5) a. **ku**- nâw -uk -**uwô** -pan -**eek** COMPLEX
2- see -INV -NON1PL -PRET -PL
'They saw you$_{pl}$'
b. ... nâw -uquy -**âk** -up SIMPLE
see -INV -2PL -PRET
'... (if/when/...) they saw you$_{pl}$' (Wampanoag; Richards 2004)

The key difference between the examples in (5) is the type of the clause itself. In Wampanoag, SIMPLE agreement is limited to a subset of embedded clauses: relative clauses, adjunct *when/if* clauses, and embedded wh-questions, whereas COMPLEX agreement shows up in all remaining types of clauses (Richards 2004). This kind of complementary distribution, with minor variations, seems to be the general pattern in Algonquian: SIMPLE agreement is required with a "marked" subset of clauses, whereas COMPLEX agreement is the "unmarked" or default paradigm.

However, this is not the only pattern attested in Algonquian. The Arapaho language (Plains Algonquian) is an outlier within the language family in many respects (see Cowell and Moss Sr. 2008). The distribution of the two agreement paradigms in Arapaho is radically different: COMPLEX agreement (traditionally *Non-Affirmative Order*) is restricted to a small set of clauses — negative, interrogative, and modal clauses (as opposed to being the default paradigm), and SIMPLE agreement (traditionally *Affirmative Order*) is the actual default paradigm. Importantly, the two paradigms are distinguished from one another in exactly the same way as in other Algonquian languages. As shown in (6), the verb in the basic declarative clause surfaces with SIMPLE agreement (6a), while the negative clause surfaces with COMPLEX agreement (6b). The two paradigms differ in terms of the presence/absence of the agreement proclitic ('**hé-**'), and in the form of the agreement suffix ('**-éinóni**' vs. '**-éi?í**').

(6) a. n<on>óóhob -**éinóni** SIMPLE
<IC>.see -3>2
'They see you$_{sg}$.'
b. **hé**- íhoow- noohob -**éi?í** COMPLEX
2- NEG- see -3PL>2SG
'They don't see you$_{sg}$.' (Arapaho; Cowell and Moss Sr. 2008)

A representative sample of the variation in terms of the SIMPLE/COMPLEX alternation pattern is shown in Table 1, where we add for comparison also the pattern of the Cree-Montagnais-Naskapi language complex (CMN) (Central Algonquian; Brittain 2001). Note that, at first glance, the Arapaho pattern appears to be reversed if compared to the two "basic" Algonquian patterns.

	Wampanoag	CMN	Arapaho
COMPLEX	<default>	<default>	negative clauses modal clauses interrogative clauses
SIMPLE	relative clauses; adjunct *when/if* clauses; embedded wh-questions	embedded clauses; *wh*-clauses; negative clauses; focus constructions	<default>

Table 1: The distribution of SIMPLE and COMPLEX agreement paradigms in Algonquian

In this study, we argue that the basic Algonquian pattern and the seemingly exceptional Arapaho one are both manifestations of the same underlying phenomenon: the presence vs. absence of V-C movement. In fact, the three patterns in Table 1 all have close parallels within Germanic with the different attested patterns of V2 (for a more detailed discussion of the parallelism, see Bogomolets et al. to appear). With the sentences in (7) below, we illustrate the standard German V2 pattern, which is sensitive (among other things) to the matrix/embedded clause contrast: V2 is blocked in an embedded clause (7a), but it is present in a matrix clause (7b).

(7) a. Ich glaube [dass Hans gestern zu Hause geblieben **ist**.] [embedded: *V2]
I believe that Hans yesterday at home stayed is
'I believe that Hans stayed at home yesterday.'
b. Gestern **ist** Hans zu Hause geblieben. [matrix: V2]
yesterday is Hans at home stayed
'Hans stayed at home yesterday.' (based on Richards 2004:366, ex. 88)

Importantly, in relation to our proposal, there is ample (micro-)variation in Germanic in terms of the availability of V2 (see e.g., Holmberg 2015), and it matches closely the variation in SIMPLE/COMPLEX alternation patterns of Algonquian; compare Table 1 above with Table 2 below.

	Icelandic	German	English
V2	<default>	<default>	negative clauses modal clauses interrogative clauses
No V2	relative clauses; adjunct *when/if* clauses; embedded wh-questions	embedded clauses adjunct clauses negative clauses	<default>

Table 2: The distribution of V2 in Germanic (Aux-C for English)

The "outlier" in Germanic is modern English, as it lacks V2 in the standard sense, rather it has a *Residual V2* pattern (Rizzi 1990). In modern English, Aux-C movement is limited to some auxiliaries and "marked" contexts like *conditional inversion* (CI) (see Biberauer and Roberts 2016), illustrated in (2), or *interrogative inversion*. Notice that the contexts where modern English requires Aux-C movement (see Table 2) and those in which COMPLEX agreement is required in Arapaho (see Table 1) essentially overlap.

(8) a. **Had** I been rich, everything would have been OK. (CI)
b. ***Did** I do that, everything would be OK. (*CI)

In earlier stages of English, Aux/V-C movement used to be more pervasive, and this kind of movement was allowed with lexical verbs as well as auxiliaries (Biberauer and Roberts 2016):

(9) a. **Dewite** þ ungesewenlice ut þonne fylð adune þ gesewenlice
depart.SUBJ the invisible(soul) out then falls down the visible(body)
'If the invisible soul departs, then the visible body falls down.' (*AEHom I, 10: 123-4*)
b. **Wenst** þu þat ic ne cunne singe?
wishes you that I not can sing
'Do you think that I can't sing?' (*The owl and the Nightingal 1.47*)

We argue that the Arapaho SIMPLE/COMPLEX pattern is to the basic Algonquian patterns what English is to the basic Germanic V2 patterns.[2] The contexts where English has Aux-C movement are almost identical to the restricted set of contexts where Arapaho has COMPLEX agreement. This contrasts with the basic Algonquian/Germanic patterns, where COMPLEX agreement/V2 is the default option and SIMPLE agreement/lack of V2 is restricted to a few specific contexts (with some variation in terms of what those are). In the remainder of the paper we first briefly review Richards' (2004) analysis, which links COMPLEX agreement directly to V-C movement, and we then expand on it by taking into account the existence of agreement allomorphs and how it relates to the position of the verb in the clausal spine. Before we proceed to the analysis itself, we draw another parallel between Algonquian and Germanic: namely, there are cases where V2 may also have an effect on the realization of agreement morphology in Germanic.

[2]We should note that French might be patterning even more closely with Arapaho in terms of its residual V2 pattern, in that it is possible with lexical verbs. We, however, discuss (Old/Middle) English instead in order to maintain the parallelism between variation within Algonquian and variation within Germanic.

2.1 A Note on V2 and Agreement

The parallel we are drawing between the "V-C agreement" paradigm in Algonquian and V-C movement in Germanic is not merely abstract. There are cases where agreement is sensitive to syntactic position of the verb in Germanic as well. This is true of Dutch, where the presence of an agreement suffix on the verb depends on its position in the syntax, specifically, its position in relation to the subject (Zwart 1994, Bennis and Maclean 2006, Don et al. 2013). In matrix clauses, the verb is in the second position, due to Dutch being a V2 language, as shown in (10a) and (10b). Interestingly, agreement does not surface on the verb in V2 clauses if the subject follows the verb. The presence of V-C movement crucially directly feeds this process, since agreement is never affected the same way when the verb does not move to C, as in embedded clauses like (10c).

(10) a. Met je zusje **loop** je naar de snoepwinkel. [matrix V > S: ∅]
with your sister walk-∅ you to the candy.shop
'You walk to the candy shop with your sister.'

b. Je **loop**-t met je zusje naar de snoepwinkel. [matrix S >V: AGR]
You walk-AGR with your sister to the candy.shop
'You walk to the candy shop with your sister.'

c. … dat je met je zusje naar de snoepwinkel **loop**-t. [embedded: AGR]
… that you with your sister to the candy.shop walk-AGR
… 'That you walk with your sister to the candy shop.'

Thus, examples like (10) show that the surface form of agreement morphology can in fact be conditioned by the position of the finite verb in the syntax. Despite there being additional factors in Dutch constraining the realization of agreement, such examples are illustrative of the logic behind the analysis of the SIMPLE/COMPLEX alternation that we will propose below.

3 COMPLEX Agreement as an Instantiation of V2-style V-C movement

So far, we have demonstrated that COMPLEX agreement in Algonquian arises in the environments where V/Aux-C movement in Germanic can also be found. In fact, this parallel has been previously drawn in the literature. Richards (2004), focusing on Wampanoag, argues explicitly that COMPLEX agreement surfaces with V2-style V-C movement, and SIMPLE agreement surfaces when V-C movement is blocked and the verb only moves as high as T. For him, an AGR morpheme can only be spelled-out at PF if the verb moves to AGR (or its host), as illustrated in (11a), or alternatively if it moves through AGR (or its host), as in (11b) (see also Phillips 1998).

(11) a. [AGR … [… V …]] b. [X … [AGR … [… V …]]]

Richards proposes that Wampanoag has three loci of agreement: AGR_1, AGR_2, and the pro-clitic CL (in SpecCP). When V-C movement occurs, V "picks up" AGR_1, AGR_2, and becomes adjacent to CL, ensuring its realization at PF (12b). In contrast, when V-C movement is blocked, V only moves through AGR_1 and cannot "pick-up" AGR_2 or host CL, so only AGR_1 is realized at PF (13b).

(12) a. **ku**- nâw -uk **-uwô** -pan **-eek** COMPLEX
2- see -INV -NON1PL -PRET -PL
'They saw you$_{pl}$' (Wampanoag; cf. (5a))

b. [$_{CP}$ CL= [C-AGR_2 … [AGR_1 … [… V …]]]]

(13) a. … nâw -uquy **-âk** -up SIMPLE
see -INV -2.PL -PRET
'… (if/when/…) they saw you$_{pl}$' (Wampanoag; cf. (5b))

b. [$_{CP}$ CL=* [C-AGR_2* … [AGR_1 … [… V …]]]]

As it stands, Richards' analysis cannot be extended to Arapaho. This is because he explicitly ties V-C movement, and therefore COMPLEX agreement, to canonical V2 contexts (matrix clauses, and some "plain" embedded clauses). Recall, however, that in Arapaho (most of) those contexts are the ones where SIMPLE agreement occurs as opposed to COMPLEX agreement. Despite this, we argue that a Richards-style analysis can be extended to Arapaho. The analysis needs to be amended so that all types of V-C movement yield COMPLEX agreement. There is, however, also a crucial issue that is set aside by Richards, namely the varying forms of the agreement morphemes themselves. We address this in the following section, where we present our analysis of the SIMPLE/COMPLEX alternation, which builds on Richards (2004) but also takes into account morphological asymmetries between the two paradigms, which has not been done in any of the previous movement analyses of the phenomenon. Finally, we argue that these morphological correlates of V-C movement may be the only strategy available for polysynthetic languages to overtly express V-C movement.

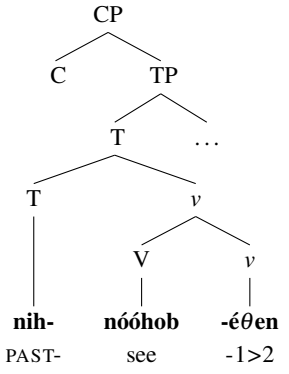
4 Morphological Correlates of V-C Movement

We draw on the basic idea put forward by Richards (2004). Namely, we take more agreement morphology to be the result of verb movement. Crucially, unlike any of the existing analyses, we also use the form of the AGR markers as evidence for V-movement.[3] Let us now turn to the derivation of the Arapaho pattern. In our analysis, Arapaho has two loci of verbal agreement: AGR (hosted by v^0) and a proclitic CL (merged in SpecCP). V-C movement (= COMPLEX) in Arapaho is only possible in negative, modal and interrogative clauses; in all other contexts it does not take place. Consider then the structures for SIMPLE and COMPLEX verb forms after head movement:

(14) SIMPLE V (post head-movement)

a. nih-nóóhob-**éθen**
PAST-see-1>2
'I saw you.'

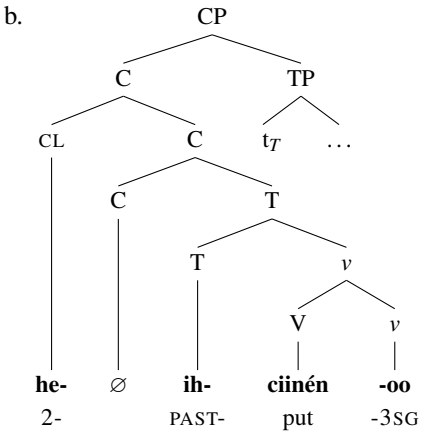
b.



(15) COMPLEX V (post head-movement)

a. toot-**he**-ih-ciinén-**oo**
where-2-PAST-put-3SG
'Where did you put it?'

b.



We propose that when V only moves as high as T (14), the result is SIMPLE agreement. Conversely, when V moves further to C (15), this allows for the possibility of C-related allomorphy on *v*-AGR and the inclusion of CL in the verbal complex via *m-merger*. The different AGR-affix forms can thus be explained as resulting from the presence/absence of particular heads in the verbal complex (see also Oxford 2015). Crucially, both allomorphy and m-merger are morphological operations subject to strict locality constraints, and in the case of (14) blocked due to the absence of V-C movement; our analysis thus eliminates Richards' stipulated PF conditions on AGR/CL spell-out. In

[3]There also exist proposals which, conversely, link SIMPLE agreement (= less morphology) to verb movement (see Brittain 2001, Branigan 2012). But see Bogomolets et al. (to appear) where we show that such analyses cannot account for the full range of the possible distributions of COMPLEX and SIMPLE paradigms and they fail to provide an explanation for the striking parallelism between Germanic and Algonquian.

the following two sections, we look more closely at the morphological evidence for V-C movement by first focusing on the AGR-suffix in Section 4.1 and then on the CL proclitic in Section 4.2.

4.1 Part I: The AGR-suffix Allomorphs

We begin our discussion of the morphological evidence for V-C movement in Algonquian with considering the suffixes in the COMPLEX and the SIMPLE paradigms in Arapaho (Table 3):

Person	COMPLEX			SIMPLE
1SG>2SG	e-	•	-éθe	-éθe-n
1SG>2PL	e-	•	-éθe-be	-eθé-nee
1SG>3SG	ne-	•	-oo	-oʔ/-óʔ
1SG>3PL	ne-	•	-óó-noʔ	-óʔ-i
2SG>1SG	e-	•	-i	-í-n
2SG>1PL	e-	•	-í-be	-éiʔee-n
2SG>3SG	e-	•	-oo	-ót
2SG>3PL	e-	•	-óó-noʔ	-ót-i(i)
3SG>1SG	ne-	•	-eʔ	-éí-noo
3SG>1PL	e-	•	-éí-be	-éiʔee-t
3SG>2SG	e-	•	-eí	-éí-n
3SG>2PL	e-	•	-éí-be	-éí-nee

Person	COMPLEX			SIMPLE
1PL>2SG	e-	•	-éé	-ee-n
1PL>2PL	e-	•	-ee-be	-éé-nee
1PL>3SG	ne-	•	-óó-be	-ee-t
1PL>3PL	ne-	•	-óó-be	-éé-θ-iʔ
2PL>1SG	e-	•	-í-be	-i-nee
2PL>1PL	e-	•	-éiʔéé-be	-éiʔéé-nee
2PL>3SG	e-	•	-óó-be	-óó-nee
2PL>3PL	e-	•	-óó-be	-óó-nee
3PL>1SG	ne-	•	-eí	-í-θ-iʔ
3PL>1PL	ne-	•	-éí-be	-éiʔíee-θ-iʔ
3PL>2SG	e-	•	-eí(ʔí)	-éí-nón-i(i)
3PL>2PL	e-	•	-éí-be	-éí-nee

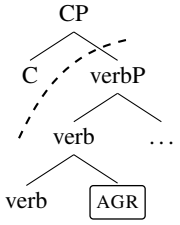
Table 3: Arapaho transitive agreement

Even without a full segmentation, one can note obvious similarities between the suffixes of the COMPLEX and SIMPLE paradigm: e.g., with 1SG>2SG the **-éθe** suffix is constant across both COMPLEX and SIMPLE paradigms. But there are also notable differences across the paradigms: e.g. with 2SG>1PL the central suffix alternates between **-be** (COMPLEX) and **-n** (SIMPLE). We take this as evidence of *contextual allomorphy* in the latter case, and propose that the observed allomorphy is indirectly conditioned by V-C movement: only when the verb moves to C the two become part of the same morphological domain, and C can affect the realization of AGR, i.e., trigger allomorphy (cf. Bobaljik 2012, Embick 2010, Moskal 2015). Thus, in (16), the allomorphy rule (ii.) is inapplicable due to AGR and C being in different domains (nb. the structures only show relevant heads). In contrast, when the verb and C are in the same domain (after the verb moves) as in (17), the allomorphy rule (ii.) *can* and *must* apply as opposed to the elsewhere rule (i.).

(16) Arapaho SIMPLE:

a. n<on>óóhob -**éinóni**
<IC>.see -3>2
'They see you$_{sg}$.'

b.

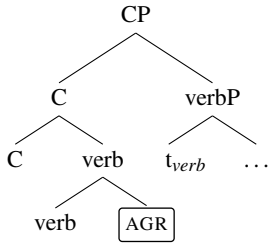


i. AGR ⇔ **éinóni**	✓
ii. AGR ⇔ **éiʔí** / [__ C]	✗

(17) Arapaho COMPLEX:

a. héí- hoow- noohob -**éiʔí**
2- NEG- see -3PL>2SG
'They don't see you$_{sg}$.'

b.



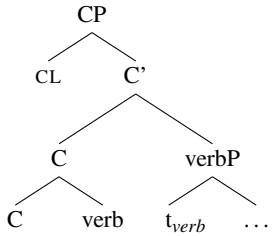
i. AGR ⇔ **éinóni**	✗
ii. AGR ⇔ **éiʔí** / [__ C]	✓

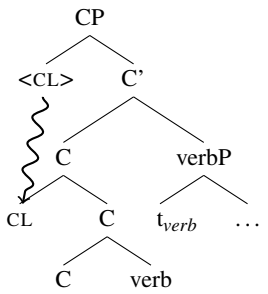
4.2 Part II: The Proclitic

The second kind of morphological evidence for V-C movement comes from the proclitic, which only shows up in the COMPLEX paradigm, i.e., according to our analysis, when the verb moves to

C. We propose that CL is pronominal, and does not originate inside the verbal head-complex, but rather becomes part of it through m-merger, giving rise to distinct phonological interactions (see discussion in Section 4.2.1). The m-merger of CL from SpecCP onto the verbal complex can only take place when the verb is in C, which is illustrated in (18b,c).

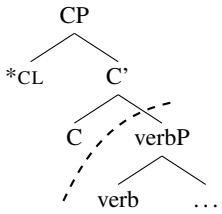
(18) a. **héí**- hoow- noohob -éiʔí
2- NEG- see -3PL>2SG
'They don't see you$_{sg}$.'

b.


c. m-merger:


It has been suggested that m-merger is (like contextual allomorphy) a local operation (Marantz 1984, Embick and Noyer 2001): it cannot apply over intervening maximal projections. In our case, this means CL cannot m-merge onto the verbal complex when verbP (the highest verbal projection) invervenes between it and the target. This in turn means that when V-C movement is absent, CL cannot attach itself to the verbal complex, resulting in SIMPLE agreement, as illustrated in (19).

(19) a. n<on>óóhob -éinóni
<IC>.see -3>2
'They see you$_{sg}$.'

b.


Additional evidence for this proposal comes from the phonological interactions observed between the proclitic and the verb stem which are addressed in the next subsection.

4.2.1 Further Evidence from Clitics

The phonological behaviour of the pronominal proclitic differs when compared to other verbal material. This points to the two kinds of verbal morphology being part of different domains (see also Piggott and Newell 2006) or alternatively resulting from different morpho-syntactic operations (e.g. m-merger vs. head-movement). Below, we show that pronominal proclitics in Arapaho act as of separated from the verb stem by a phonological boundary, and yet they still exhibit some sensitivity to the phonological properties of the verb stem, which we will take as an additional piece of evidence for claiming that the verb head-moves to C and CL attaches to it via m-merger.

The relative prosodic independence of the pronominal proclitic can be illustrated through the patterns of hiatus resolution. Arapaho does not allow onset-less syllables in the beginning of a word, and employs the mechanism of /h/-epenthesis in cases where this condition is violated. This is illustrated with the examples in (20), which show that the imperfective prefix **ii-** must be preceded by **/h/** word initially (20a), but not word internally (20b).

(20) a. **hii**-hoow-niisíθei
IMPF-NEG-work
'S/he doesn't work'

b. h<é>étn-**ii**-biiθíhi-noo
<IC>FUT-IMPF-eat-1SG
'I will be eating.'

Crucially, /h/-epenthesis also applies to **ii-** when preceded by a pronominal proclitic. This is seen in (21), which patterns with (20a) and not with (20b). The /h/-epenthesis in (21) suggests that there is a prosodic boundary present between the proclitic and other verbal material following it.

(21) toot-**hei**-**hii**-tisee [proclitic+IMPF]
where-2SG-IMPF-come.from
'Where did you come from?'

Moreover, the process of /h/-epenthesis shows that the CL is sensitive to the phonological shape of the stem: /h/ is epenthesized between the proclitic and the stem only if the resulting vowel sequence is more than two moras (22a). When the resulting sequence is no more than two moras (22b), no resolution occurs and the CL forms a single phonological domain with the following verb stem.

(22) a. toot-he-**hii**-tisee
where-2-IMPF-come.from
'Where did you come from?'

b. toot-he-**ih**-ciinén-oo
where-2-PST-put-3SG
'Where did you put it?'

The second kind of phonological process showing the sensitivity of the clitics to phonology of the verb stem is vowel harmony. Person clitics always harmonize in backness with the vowel in the first syllable of the following stem. Compare the form of the 2P CL preceding the stem with a back vowel in (23a) to the form of the same clitic before the stem with a front vowel in (23b):

(23) a. **ho**-tous-íhiʔ
2-how-named
'What is your name?'

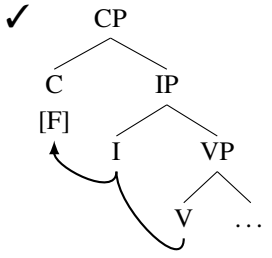
b. toot-**he**-hii-tisee
where-2-IMPF-come.from
'Where did you come from?'

We thus observe that pronominal proclitics exhibit sensitivity to phonological properties of the stem while maintaining some phonological independence. This supports our analysis where the CL becomes part of the verbal complex through m-merger (possible only with V-C movement), as it correctly predicts that although CL becomes part of the verbal complex, it does not have the same status as other morphemes on the verb that presumably incorporate via head-movement.

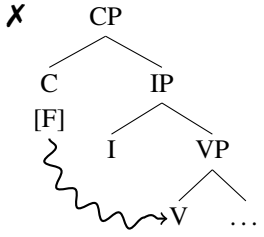
5 Conclusion

In this paper, we argued that V-C movement can be detected in polysyntetic (Algonquian) languages by its morphological correlates. Our claim is based partly on the parallelism between Algonquian and Germanic in terms of the contexts where "V-C agreement" and V-C/V2 can respectively occur, and partly on the morphological properties of the two alternating agreement paradigms in Arapaho (Plains Algonquian). Importantly, we proposed that allomorphy on the verb can be conditioned by V-C movement in that the latter makes C part of the verbal complex, enabling morphological interactions between C and the verb. In fact, this may be the only option for marking contrasts between different types of clauses in languages that lack the relevant dedicated clause-typing morphology. A type of clause characterized by a feature [F] could in principle be made distinct either through [F]-triggered V-movement (24a), or through special morphology triggered on V by [F] (24b):

(24) a. <u>[F]-driven V-movement:</u>



b. <u>[F]-morphology on V:</u>



However, given the standard assumption that morphological processes like allomorphy, suppletion, m-merger, etc. are subject to strict locality conditions (see above), the option in (24b) should not be possible. This means that (24a) is a necessary prerequisite for morphological effects of [F] to be visible on the verb. We leave the full implications of this to be explored in future work.

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